Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) An apparatus for retracting a disk drive actuator arm assembly, comprising:

a spindle motor which generates a back electromotive force voltage;

a DC-to-DC converter circuit connected to said spindle motor which converts said back electromotive force voltage into an output voltage;

a feedback circuit connected to said DC-to-DC converter and controlling switching thereof;

a retract circuit, connected to said DC-to-DC converter and powered thereby; and

a voice coil motor activated by said retract circuit and operating to retract said actuator arm assembly, wherein the spindle motor is braked while the actuator arm assembly is retracted.

2. (original) The apparatus of claim 1 wherein said DC-to-DC converter includes an inductor, a switch, a diode, and a capacitor.

3. (original) The apparatus of claim 2, wherein windings of said spindle motor are used as said inductor.

4. (original) The apparatus of claim 1, wherein said output voltage is larger than said back electromotive force voltage.

5. (original) The apparatus of claim 1, wherein said retract circuit is connected to an output portion of said DC-to-DC converter and is powered by said output voltage.

6. (original) The apparatus of claim 2, wherein said feedback circuit comprises comparison circuitry for comparing said output voltage of said DC-to-DC converter to a predefined target voltage.

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7. (original) The apparatus of claim 6, wherein said feedback circuit opens said switch based upon a comparison of said output voltage to said predefined target voltage.

8. (original) The apparatus of claim 7 wherein said feedback circuit further comprises timing circuitry.

9. (original) The apparatus of claim 8 wherein said timing circuitry has a fixed off-period timer wherein said switch is closed following said fixed off-period.

10. (original) The apparatus of claim 9 wherein said feedback circuit includes low voltage limit circuitry, wherein said switch is closed permanently based upon said output voltage level following said fixed off-period.

11. (original) The apparatus of claim 8 wherein said timing circuitry has a variable off-period timer wherein said switch is closed following said variable off-period.

12. (original) The apparatus of claim 11 wherein said variable off-period is adjusted dependent upon said output voltage of said DC-to-DC converter during said variable off-period.

13. (original) The apparatus of claim 8 wherein said timing circuitry has a variable on-period timer wherein said switch is closed during said variable on-period.

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14. (original) The apparatus of claim 13 wherein said variable on-period is adjusted dependent upon said output voltage of said DC-to-DC converter during said variable on-period.

15. (original) The apparatus of claim 11 wherein said timing circuitry has a maximum value for said variable off-period.

16. (original) The apparatus of claim 15 wherein said variable off-period is adjusted based upon said output voltage of said DC-to-DC converter during said variable off-period.

17. (original) The apparatus of claim 16 wherein said switch is closed permanently upon said variable off-period reaching said maximum value.

18. (currently amended) A method for powering a retract circuit in a disk drive, comprising:

detecting that power has been lost to said disk drive;

initiating a retract cycle to park an actuator arm assembly;

using a back electromotive force generated from a spinning spindle motor to generate a back electromotive force voltage;

implementing a DC-to-DC converter to generate an output voltage higher than the back electromotive force voltage;

activating said retract circuit using said output voltage; and

repositioning an actuator arm assembly using said retract circuit while braking the spinning spindle motor.

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19. (cancelled)

20. (currently amended) The method of claim [[19]] 18, wherein said braking step comprises shorting at least one winding associated with said spindle motor.

21. (original) The method as claimed in Claim 18, wherein said implementing step comprises:

closing a switch in said DC-to-DC converter;

storing energy in an inductor at a first voltage level;

opening said switch in said DC-to-DC converter; and

steering said stored energy into a capacitor to store the energy at said output voltage level.

22. (original) The method of claim 18, further comprising comparing said output voltage to a predefined target voltage.

23. (original) The method of claim 22 wherein said activating step is initiated based upon said comparing step.

24. (original) The method of claim 23 further comprising secondly comparing said output voltage to said predefined target voltage following said activating step.

25. (original) The method of claim 24 wherein a permanent brake cycle is initiated based on said secondly comparing step.

26. (currently amended) An apparatus for retracting a disk drive actuator arm assembly, comprising:

retract means for retracting said disk drive actuator arm assembly;

motor means for generating a back electromotive force voltage;

converter means for converting said back electromotive force voltage into an output voltage for powering said retract means, wherein said retract means retract said disk drive actuator arm assembly while said motor means are braked; and

feedback means for controlling said converter means.

27. (original) The apparatus of claim 26, wherein said feedback means comprises:

comparison means for comparing said output voltage to a predefined target voltage;

switch means for switching said converter means; and

timer means for timing said switch means.

28. (new) An apparatus for retracting a disk drive actuator arm assembly, comprising:

a spindle motor which generates a back electromotive force voltage;

a DC-to-DC converter circuit connected to said spindle motor which converts said back electromotive force voltage into an output voltage;

a feedback circuit connected to said DC-to-DC converter and controlling switching thereof;

a retract circuit, connected to said DC-to-DC converter and powered thereby; and

a voice coil motor activated by said retract circuit and operating to retract said actuator arm assembly, wherein said feedback circuit comprises comparison circuitry for comparing said output voltage of said DC-to-DC converter to a predefined target voltage.

29. (new) The apparatus of claim 28, wherein said feedback circuit opens said switch based upon a comparison of said output voltage to said predefined target voltage.

30. (new) A method for powering a retract circuit in a disk drive, comprising:

detecting that power has been lost to said disk drive;

initiating a retract cycle to park an actuator arm assembly;

using a back electromotive force generated from a spinning spindle motor to generate a back electromotive force voltage;

implementing a DC-to-DC converter to generate an output voltage;

activating said retract circuit using said output voltage;

repositioning an actuator arm assembly using said retract circuit; and,

comparing said output voltage to a predefined target voltage.

31. (new) The method of claim 30 further comprising secondly comparing said output voltage to said predefined target voltage following said activating step.

32. (new) An apparatus for retracting a disk drive actuator arm assembly, comprising:

retract means for retracting said disk drive actuator arm assembly;

motor means for generating a back electromotive force voltage;

converter means for converting said back electromotive force voltage into an output voltage for powering said retract means; and

feedback means for controlling said converter means, wherein said feedback means comprises:

comparison means for comparing said output voltage to a predefined target voltage;

switch means for switching said converter means; and

timer means for timing said switch means.

33. (new) A method comprising the steps of:

providing a disk drive having a disk, a spindle motor for rotating the disk, and a transducer head for reading data from said disk;

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after power has been lost to the disk drive, retracting said transducer head using a back electromotive force generated from the spindle motor while braking the spindle motor.